

ATOMIC ENERGY *newsletter*®

A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH
ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS CO., 1000 SIXTH AVENUE, NEW YORK 18, N. Y.

Dear Sir:

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Plans and specifications will be available end of this week (Feb. 5) for bids on work at SPERT IV facility, at national reactor testing station, Idaho. SPERT IV is to be a large pool-type experimental facility to enable basic reactor kinetic studies to be made with various types of cores. The work to be open for bids (under invitation AT (10-1)-1022) is construction of the reactor building, instrumentation, coolant system, process and utility piping, electrical power system, water treatment system, and related services. Bid forms, details, etc., may be obtained from USAEC's Idaho operations office, Idaho Falls, Idaho. (Other CONTRACT NEWS, p.3 this LETTER.)

Approximately 1,000 kg of 93% uranium oxide are to be supplied by Mallinckrodt Nuclear Corp., St. Louis, Mo., to Consolidated Edison Co., New York, for the latter's Indian Point nuclear power plant now under construction. The fuel will come from the USAEC's Oak Ridge facilities, will be processed by Mallinckrodt at its Hematite, Mo., plant, and then sent to the nuclear facilities plant of Babcock & Wilcox at Lynchburg, Va. At Lynchburg the uranium oxide will be mixed with thorium oxide and fabricated into fuel element pellets. Mallinckrodt will make first shipment to Lynchburg around March 1, with remaining deliveries scheduled periodically until completion of the order in late 1960. (Other PRODUCT NEWS, p.4 this LETTER.)

Eleven thousand acres of land some 60 miles east-north-east of Winnipeg, Manitoba, have been obtained by Atomic Energy of Canada, Ltd., as a site for Canada's second nuclear research center: Whiteshell Nuclear Research Establishment. Preliminary studies have been done at the site by Shawinigan Engineering Co., Ltd., Montreal; some work will begin next Summer, but major construction is not expected to start before 1961. An organic-cooled, natural-uranium-fueled, heavy-water-moderated power reactor is planned for Whiteshell. (Site for this new research establishment had been sought for some time as Chalk River, AECL's nuclear research center, is near maximum size for efficient operation.) (Other RESEARCH NEWS, p.4 this LETTER.)

First fulfilment by other than the holder of uranium sales contract in Canada is agreement of Rayrock Mines and Gunnar Mines, under the new Canadian policy of allowing a producing mine with excess capacity to complete the balance of contract of a mine whose own ores had been exhausted. Under the agreement, approximately \$185,000 a month will be received by Rayrock starting this month and running to March, 1962, for a total profit to the company, before taxes, of about \$5 million. Concentrates will come from Gunnar's ore stocks which as outlined are considered adequate to fill its own uranium contracts, as well as Rayrock's. (Other BUSINESS NEWS, p.2 this LETTER.)

Nuclear Congress and Exposition, scheduled for April 4-7, in New York, will have largest number of exhibitors of any Congress to date according to space booked. Some 91 companies and 3 foreign governments have made commitments for displays at the Exposition. (Other MEETINGS, COURSES, CONFERENCES, p.5 this LETTER.)

ATOMIC ENERGY FINANCIAL NEWS...

BUDGET OF USAEC SHOWS CHANGES FOR FISCAL YEAR 1961: Operating budget of the USAEC for fiscal year 1961, presented to Congress last week, is \$2,427,300,000 an increase of some \$40,186,000 over fiscal year 1960 budget. Eight major Commission activities will get increased funds; three activities less. Reduced are funds for raw materials, community support and maintenance, and security investigations. Increased spending will be on special nuclear materials, \$567,700,000 (up \$4,700,000); weapons, \$495,000,000 (up \$2,900,000); reactor development, \$436,200,000 (up \$33,800,000); physical research, \$158,900,000 (up \$11,256,000); biology and medicine, \$54,200,000 (up \$5,200,000); training, education, and information, \$14,200,000 (up \$700,000); civilian applications of isotopes and commercial uses of nuclear explosives, \$12,500,000 (up \$500,000); and administration, \$54,900,000 (up \$2,900,000).

The reactor development program provides: \$8,300,000 for merchant ship reactors, plus \$2,904,000 for operating expenses of the nuclear ship Savannah which is to go into service this year; \$73,000,000 for aircraft propulsion; \$14,000,000 for satellite power sources; \$8,300,000 for Army power reactors; and \$85,000,000 for Naval propulsion.

In the construction budget of the USAEC, for fiscal year 1961, which is \$215,500,000, a decrease of \$47,000,000 from 1960 spending is indicated. Funds are required for: special nuclear materials, \$56,966,000; weapons, \$27,500,000; communities, \$1,240,000; raw materials, \$100,000; reactor development, \$101,644,000; physical research, \$23,000,000; biology and medicine, \$4,300,000; and training, education and information, \$150,000.

For research and development in fiscal year 1961 the USAEC will spend \$1,054,000,000 which is \$47,000,000 higher than 1960 figure.

ATOMIC ENERGY BUSINESS NEWS...

BRITISH CONCERN IN LICENSE ARRANGEMENT FOR REACTOR MANUFACTURE & SALES:

Vickers-Armstrongs (Aircraft), Ltd., will manufacture and sell General Dynamics Corp.'s TRIGA-type nuclear reactors in the U.K. and Northern Ireland, under license arrangement recently concluded between the two firms. The agreement covers GD's patent and know-how position of its General Atomic division on standard below-ground and Mark II above-ground TRIGA reactors, but does not extend to other activities of GD's General Atomic division. Vickers-Armstrongs will manufacture all portions of the TRIGA reactors except its fuel-moderator elements of uranium-zirconium hydride. These will continue to be supplied by General Atomic. Purchasers of U.K.-manufactured TRIGA reactors will get the same fuel element and reactor performance guarantees as are given direct customers of General Atomic. (The International Atomic Energy Agency will assist Finland's Atomic Energy Commission to acquire a TRIGA Mark II and the required fuel which is 20% enriched uranium, from the U.S. It will also obtain for Finland fuel for a critical assembly. This will be 10% enriched uranium which the Soviet Union will fabricate into fuel elements. Both the TRIGA reactor and the critical assembly will be at the Institute of Technology at Otaniemi, Helsinki).

NUCLEAR INSTRUMENT BUSINESS SOLD: The English firm of Elliott-Automation has now bought for cash the nuclear instrument business of Isotope Developments including the company's laboratories and plant at Beenham, England. Isotope Developments will change its name to Nucleonic Investments and continue to operate a subsidiary, R. A. Stephens & Co., which produces radiation measuring instruments. (Before the acquisition, Elliotts, though a subsidiary Elliott Nucleonics, had supplied every civil nuclear power station in the U.K. with nucleonic equipment; the U.K. Atomic Energy Authority is one of its principal customers. Activities now being taken over with Isotope Developments include a wide range of applications of radioisotopes, including many in the field of control in the process industries.)

LICENSES & PERMITS ISSUED: License to import seven gas centrifuges has been issued by the USAEC to Thor-Westcliffe Development, Inc., Santa Fe, N.M. To be supplied by Institute of Instrumentation, Aachen, Germany, the centrifuges will be used in pilot-scale study of process for commercial production of enriched uranium.... Hearing is scheduled Feb. 23 at USAEC headquarters, Germantown, Md., on application for construction permit by Carolinas Virginia Nuclear Power Associates, Inc., for 60,500 kw (thermal) vertical pressure tube nuclear reactor to be used in conjunction with nuclear power plant of 17,000 kw (electrical) capacity at Parr, S.C. Westinghouse Electric Corp. is designing the reactor.

ATOMIC ENERGY PATENT DIGEST...

PATENTS ISSUED January 12, 1960 to PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS:

(1) Method and means for irradiating food. Edgar S. Stoddard, inventor. No. 2,920,969 assigned to General Electric Co., New York. (2) Polymerization with high energy electrons. John V. Schmitz, Elliott J. Lawton, inventors. No. 2,921,006 assigned to General Electric Co., New York.

PATENTS ISSUED January 12, 1960 to GOVERNMENTAL ORGANIZATIONS: (1) Thermal nuclear reactor. Bernard I. Spinrad, inventor. No. 2,921,007 assigned to USAEC. (2) Method of operating a calutron. Philip H. Davidson, inventor. No. 2,921,199 assigned to USAEC.

PATENTS ISSUED January 19, 1960 to GOVERNMENTAL ORGANIZATIONS: (1) Nickel-base alloy. Henry Inouye, William D. Manly, Thomas K. Roche, inventors. No. 2,921,850 assigned to USAEC. (2) Paralyzer for pulse height distribution analyzer. Edward Fairstein, inventor. No. 2,922,036 assigned to USAEC. (3) Calutron. Edward J. Lofgren, inventor. No. 2,922,044 assigned to USAEC. (4) High current coaxial photomultiplier tube. Neel W. Glass, inventor. No. 2,922,048 assigned to USAEC. (5) Particle accelerator. Lee C. Teng, inventor. No. 2,922,061 assigned to USAEC.

PATENTS ISSUED January 26, 1960 to PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS: (1) Method for producing titanium and zirconium. Ben B. Raney, inventor. No. 2,922,712 assigned to Chicago Development Corp., Riverdale, Md. (2) Endoscopic devices. Edward Emanuel Sheldon, inventor. No. 2,922,844 issued to inventor of record. (3) Indicating or measuring apparatus. Kenneth Fearnside, inventor. No. 2,922,844 assigned to Industrial Machinery Co., Ltd., London, England. (4) Radiation thickness measurement. William H. Faulkner, Jr., James W. Shearer, inventors. No. 2,922,888 assigned to Tracerlab, Inc., Waltham, Mass. (5) Well logging systems. Hugh E. Hall, Jr., inventor. No. 2,922,889 assigned to Texaco, Inc. (6) Apparatus for reducing electron loading in positive-ion accelerators. Robert J. Van de Graaff, inventor. No. 2,922,905 assigned to High Voltage Engineering Corp. (7) Compact linear accelerator. John C. Nygard, inventor. No. 2,922,921 assigned to High Voltage Engineering Corp., Cambridge, Mass. (8) Logging of energy distribution. Charles W. Tittle, inventor. No. 2,922,885 assigned to Gulf Research & Development Co., Pittsburgh, Pa.

PATENTS ISSUED January 26, 1960 to GOVERNMENTAL ORGANIZATIONS: (1) Valve locking means. John A. McInerney, inventor. No. 2,922,615 assigned to USAEC. (2) Production of purified uranium. Leslie Burris, Jr., James B. Knighton, Harold M. Feder, inventors. No. 2,922,711 assigned to USAEC. (3) Control system for isotope separating apparatus. Sidney W. Barnes, inventor. No. 2,922,882 assigned to USAEC. (4) Method and apparatus for testing the specific atomic elements in a substance. John L. Putnam, inventor. No. 2,922,886 assigned to USAEC. (5) Magnetic method for producing high velocity shock waves in gases. Vernal Josephson, inventor. No. 2,922,890 assigned to USAEC.

TRADE-MARKS: Trade-mark "Auto-Gamma" (SN-61,732) is to be issued Packard Instrument Co., Inc., Lyons, Ill. The mark is to cover laboratory and research facility apparatus for specimen radio-activity measuring and recording.

BIDS ASKED, CONTRACTS LET...

CONTRACT EXTENDED: Contract of E. I. du Pont de Nemours & Co., under which it has operated the USAEC's Savannah River Plant, has been extended by the Commission for four years, to run through June 30, 1964. Essentially a no-fee contract, it is of the fully reimbursable type with the USAEC paying all costs involved. These costs are currently \$100,000,000 a year. The contract includes operation of five production reactors, two chemical separation areas, and a plant for the production of heavy water.

CONTRACTS AWARDED: Two contracts to supply monitoring systems for nuclear power reactors have been received by the Western division of Tracerlab, Inc., Richmond, Calif. The larger of the two systems involves \$110,000 expenditure and calls for instrumentation for continuous radiation monitoring of the fast breeder power reactor for the Enrico Fermi nuclear power plant of Power Reactor Development Associates and the Detroit Edison Co. The other contract, in the amount of \$65,000 calls for a similar system at the organic moderated power reactor for the City of Piqua's nuclear power plant....In another contract award to Tracerlab, its Waltham, Mass., organization will investigate and study X-rays for space communication as a possible means of supplementing conventional radio frequency communication systems.

NEW PRODUCTS, PROCESSES, INSTRUMENTS...

NEW PRODUCTS: New portable air sampler consists of air pump, batteries, flowmeter, filter-holder and battery charger all contained in a shoulder bag; total weight is 14-lbs. Model 103, supplied with 15 amp hour miniaturized non-spill lead storage batteries, has air capacity of 17 liters/minute and permits up to 3-hours of sampling on a single charge. Model 104, supplied with 6 amp hour nickel cadmium batteries, will sample at 13 liter/minute rate for over one hour on a single charge.Shirt pocket radiation alarm, trade-named Sparrow, gives an immediate audible warning when radiation exceeds a safe level. A miniaturized-transistorized Geiger counter, it will operate on a set of small flashlight batteries for some 2-3 weeks of normal usage. At radiation level of 1 mr/hr a crackling sound is emitted; at 10 mr/hr this becomes a smooth buzz; and at 100 mr/hr it is a high pitched whine. Approximately 5" x 2" x 1", total weight is 5-oz. with batteries. --Gelman Instrument Co., Chelsea, Michigan.

Reference Standard Kit, No. R-36, is for use in liquid scintillation counting with carbon-14 and tritium labeled samples. The kit consists of five epoxy-sealed evaporation-proofed 20 ml vials containing as a basic counting solution DPO and POPOP in toluene. An aqueous and non-aqueous blank are also supplied with the kit, which may be used with any liquid scintillation counter that accepts the standard 20 ml vial.....Labeled adrenaline: dl-Epinephrine-d-bitartrate, methyl C-14, is now available from this supplier from stock. The compound has a specific activity of 0.47 mc/mM. Uses are in metabolism studies and studies of emotional stress. --Tracerlab, Inc., Waltham, Mass.

PRODUCT NEWS: A total of 299,366 curies of radioisotopes was shipped during 1959 by Oak Ridge National Laboratory, Tenn., in filling 12,950 orders. This compares with 228,717 curies shipped in 1958 on 14,131 orders. Larger orders in 1959 came from private commercial firms (which process and redistribute the material) and there were also larger individual shipments of specific isotopes such as cobalt-60 and cesium-137. Thus, while total of radioactivity units shipped in 1959 was some 31% over 1958, the number of separate shipments was less in 1959 than in 1958. Gross receipts decreased from \$2,438,169 in 1958 to \$2,322,817 in 1959, reflecting price reductions for certain isotopes in 1959. Of the 1959 shipments, 539 valued at \$378,557 were sent by the Laboratory to 29 foreign countries. (Bulk of radioisotopes furnished overseas users is shipped by commercial suppliers, rather than the Laboratory. For 1959, commercial suppliers made 2,840 shipments abroad, they have reported.)

Gamma-ray level indicator originally developed by Salford Electrical Instruments, Ltd., (England) for the National Coal Board, to give remote indication of the level of coal in underground bunkers and within pithead, was shown at the exhibition last week in London of the Physical Society. Various accessories now allow it to be used for a variety of other industrial applications, involving both solids and liquids.

MANUFACTURERS' NEWS: Crystals, Inc., which had been operated by Isotopes, Inc., as a wholly-owned subsidiary, has now been made a division of the parent company. Established in 1957, Crystals produces organic and activated inorganic crystals, as well as plastic scintillators, for detection of radioactivity. Isotope does project research and development and laboratory measurements in isotope applications. Activities of the merged firms will continue at their Westwood, N.J., plant.

Plastic semiconductors have been produced experimentally by Russian research people at the USSR Academy of Sciences Institute of Oil-Chemical Synthesis using high dosages of ionizing radiation. With dosages of up to 4.5 million roentgens, polyacrylonitrile and polyacrylonitrile-siloxane copolymers were made as conductive as silicon or germanium. The work of the research group is continuing.

MANUFACTURERS' LITERATURE: New data sheet on erbium metal may be obtained from the producer, Research Chemicals Div., Nuclear Corp. of America, Burbank, Calif. Four page brochure describing its new line of gamma radiography equipment is available from Radiation Engineered Services, Norristown, Pa.....Mechanical properties, composition, test results and surface qualities of Inconel heat exchanger tubing for nuclear reactors are covered in Bulletin STC-107 of Superior Tube Co., Norristown, Pa.

NEW BOOKS & OTHER PUBLICATIONS...

Radioisotope Techniques. Ralph T. Overman, Herbert M. Clark. Laboratory text dealing with principles and practice of handling and measurement techniques. 476 pages. --McGraw-Hill Book Co., Inc., New York 36, N.Y. (\$10.00)

Proceedings of the International Conference on Nuclear Physics: Low Energy Nuclear Interactions & Nuclear Structure; Paris, July, 1958. Of the 950-pages of this work, 770 are in English as original language or translations, and 180 in French, being French and Russian contributions. 950 pages. --Crosby, Lockwood & Son, Ltd., 26 Old Brompton Rd., London S.W. 7, England. (\$21.00)

Surveying & Evaluating Radioactive Deposits. A. H. Lang, Geological Survey of Canada. Based mainly on Canadian and U.S. experience, although examples and references are given from other countries including Australia, India, France and the USSR. (\$1.00 or 6 shillings.).....International Agreements in the Atomic Energy Field. Covers ten basic international agreements made from 1945 to date. (\$2.50 or 15 shillings.)-- International Atomic Energy Agency, Vienna I, Austria.

Quarterly Report of Fallout; For period Oct., Nov., Dec., 1959. No. HASL-77. Report covering surface air radioactivity, monthly fallout collections, radioactivity in milk and other foods and human bone, and results of stratospheric studies, in the U.S. Prepared by the USAEC's New York health and safety laboratory. --Office of Technical Services, Wash. 25, D.C. (\$3.50)

NOTES: Proceedings of Technical Meetings is 29-page catalog listing and describing 126 selected meetings, symposia, and conferences of the past ten years sponsored or co-sponsored by the USAEC. It may be obtained free from USAEC, Technical Information Service Ext., P.O. Box E, Oak Ridge, Tenn.

Lists 49 and 50 cover publications made available to the public during Dec. 1959 and Jan. 1960 by the U.K. Atomic Energy Authority. Details may be obtained from Librarian, Atomic Energy Research Establishment, Harwell, England.

Shipments of Nuclear Products in 1958 are covered in "Atomic Energy Products, 1958" issued and for sale by the Bureau of the Census, Washington 25, D.C., at 10¢ per copy.

Full set of the 57 papers which will be presented at the Nuclear Congress, April 4-7, in New York, may be obtained at \$20.00. Requests should be made to Nuclear Congress, 29 W. 39th St., New York 18, N.Y. (Coordinated by the Engineers Joint Council, the Congress is sponsored by some 28 engineering, scientific and industrial organizations.)

MEETINGS, COURSES, CONFERENCES...

COURSES: Criticality and Criticality Problems is a two-week course to be offered June 20-July 1, 1960 by the University of California, Berkeley. Nuclear Technology: An Executive Survey is offered at Berkeley July 18-22, 1960. Brochures and full details of these courses may be obtained from Engineering & Sciences Extension, 2451 Bancroft Way, Berkeley 4, Calif.

FELLOWSHIPS: Six research fellowships will be awarded by Texas Atomic Energy Research Foundation and General Dynamics this Summer to Texas graduate students for work at General Atomic division of General Dynamics Corp. in San Diego. Holders of the fellowships will assist in theoretical and experimental research in plasma physics, optical and mass spectrometry, etc. Applications are to be made before March 1, 1960.

CONFERENCES: Three day meeting March 29-31, 1960 of American Power Conference, in Chicago, will include forum devoted to non-conventional methods of generating power. Research experts will discuss the fuel cell, the nuclear rocket program, isotopic heat and power, and magnetohydrodynamics. Details of the conference may be obtained from Illinois Institute of Technology, Chicago 16, Ill., which is sponsoring the conference in conjunction with a number of technical societies and educational institutions.

Sincerely,

The Staff,
ATOMIC ENERGY NEWSLETTER